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ABSTRACT

Constructs underlying student ratings of instruction in an introductory master's level educational research course were investigated in order to gain a better understanding of instructor behaviors that facilitate student success. During academic years 1990-91 and 1991-92, an institutionally developed scale was administered to students enrolled in master's level education courses at a metropolitan university in Tennessee. Students majored in education, counseling, and school psychology. A 17-item institutionally-developed 7-point Likert-type rating scale was used to elicit perceptions of the instructor and course characteristics thought to be related to instructional outcomes. Included among 1,597 student ratings were 144 from students who rated research methods classes. Independent principal components analyses followed by varimax rotations were conducted on ratings from those enrolled in research methods classes and those enrolled in other graduate classes. Research methods ratings yielded 4 factors accounting for 75.2 percent of the variance, while from other graduate education ratings, only 3 factors accounted for 73.3 percent of the variance. The unique research factor "thoroughness" together with specific item comparisons suggested the existence of a different rating policy within research methods classes. Two tables are included. (Author/RLC)

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A Factor Analytic Study of Graduate Education Students' Ratings of Research Methods Instruction

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Abstract

Constructs underlying student ratings of instruction in an introductory master's level educational research course were investigated in order to gain better understanding of instructor behaviors which facilitate student success. During academic years 1990-91 and 1991-92, an institutionally developed scale was administered to students enrolled in master's level education courses at a metropolitan university. Included among 1597 student ratings were 144 from students who rated research methods classes. Independent principal components analyses followed by varimax rotations were conducted on ratings from those enrolled in research methods and those enrolled in other graduate classes. Research methods ratings yielded four factors accounting for 75.2% of variance while from other graduate education ratings only three factors accounted for 73.3% of variance. The unique research factor "Thoroughness" together with specific item comparisons suggested the existence of a different rating policy within research methods classes.

Introduction

Student ratings of instruction have long been a major source of data for evaluating college faculty and courses. Student rating results are extensively used for both formative and summative evaluation. Research on the student rating process and its components has been abundant in literature in the field of faculty evaluation (Arreola and Aleamoni, 1990). Much of the research on student ratings has focused on teacher characteristics used by students to evaluate instruction (Banz and Rodgers, 1985 p. 267). Knowledge of such characteristics can be used by faculty to plan instructional strategies designed to enhance student motivation and learning.

Numerous factor analytic studies have concluded that student rating forms generally measure multiple aspects of teaching (Marsh and Hocevar, 1984 p. 342 - 43). The factor structure of an instrument provides evaluators with knowledge of dimensions on which students base judgments about the instructor and the teaching-learning process. Such knowledge can obviously be of use to those who desire to improve student outcomes in the courses they teach.

Abrami (1989) emphasizes that the dimensions of student ratings which emerge from analysis of the factor structure of rating instruments lack generalizability across a variety of course, instructor, and student settings. Abrami, d'Apollonia, and Cohen (1990) stress the importance of studying student ratings in the local institutional context. Identification of rating dimensions distinctively associated with specific courses could shed considerable light on peculiar attributes of the teaching learning process as it pertains to those courses.

Faculty who teach introductory graduate courses in educational research frequently observe that their students appear to experience considerably higher levels of course related anxiety and discomfort than is the case with other graduate level education courses. They generally speculate that this phenomenon is related to the quantitative nature of the course and the fact that students are often encouraged or required to take research methods as their first graduate course.

Several studies have examined attitudes of graduate students in education and psychology toward

research and research instruction. Royalty, et al. (1986) investigated counseling psychology students' attitudes toward research training in doctoral degree programs. Subjects were found to have less than positive attitudes toward research and research training even at the time they entered doctoral programs. Benton and Jerrolds (1982) studied the relationship between research attitude and achievement in an introductory master's level educational research course. While attitudes were found to have improved by the end of the course, no correlates of attitude improvement were identified nor was attitude found to be significantly related to achievement.

The purpose of this study was to identify distinctive aspects of student rating patterns in an introductory master's level educational research methods course in order to gain better understanding of instructor behaviors which might facilitate student success in the course. Principal components analysis was used to compare constructs that students used to evaluate instruction in the research course with those used to evaluate instruction in other graduate education courses.

Method

Subjects

Subjects of this study were master's level students enrolled in education courses at a metropolitan university in Tennessee. Included among subjects were students majoring in education, counseling, and school psychology. Subjects participated in the university's student rating of faculty instruction process during academic years 1990 - 91 and 1991 - 92. Each university class taught during the fall semester is routinely rated by all enrolled students. Courses not taught in the fall and class sections of fall rated courses taught by other instructors are rated during spring and summer terms. A total 1597 ratings were received from graduate education classes rated during the two academic years. One hundred forty-five of those ratings were obtained from seven sections of the educational research methods course taught by four different instructors.

Instrument

A seventeen-item institutionally-developed seven-point likert-type rating scale was used to elicit perceptions of instructor and course characteristics thought to be related to instructional outcomes. An

Alpha reliability coefficient of .96 was obtained from administration of the instrument across all levels of classes and academic divisions within the university. Factor analyses conducted on previous results of the rating instrument have generally identified three non-trivial factors at all course levels and within several disciplines.

Procedure

Separate principal components analyses were conducted on the ratings obtained from two groups of subjects: those enrolled in sections of the research methods course and those enrolled in other graduate education classes. Factors with eigenvalues greater than one were selected for varimax rotation.

Results

Four factors with eigenvalues greater than one accounted for 75.2% of the variance within the research methods rating data. From the ratings of other graduate education classes only three factors emerged accounting for 73.3% of the variance.

Factor Analysis of Non-Research Ratings

Table 1 displays ratings items and rotated factor loadings resulting from principal components analysis of ratings obtained from the other (non-research) graduate education classes. The first factor which accounted for 59.1% of the variance loaded on three general items: 16 (overall teaching effectiveness), 15 (perceived student learning), 17 (desire to take another course from the instructor), and seven specific competency related items. This factor was named "competency."

Factors II and III accounted respectively for an additional 7.8% and 6.7% of variance among items rated by students in the non-research classes. Factor II loaded on four rating items dealing with relevance, fairness, and communication of class evaluation and assignments. This factor was named "teaching equity." The three items on which Factor III loaded elicit

TABLE 1

FACTOR LOADINGS FOR PRINCIPAL COMPONENTS ANALYSIS OF **"OTHER" GRADUATE EDUCATION RATINGS** WITH VARIMAX ROTATION FOR THREE FACTOR MODEL
(DECIMAL POINTS OMITTED)

#	RATING ITEM	FACTOR I	FACTOR II	FACTOR III
4	My Instructor Stimulates Interest in the Subject	81	13	29
5	My Instructor Uses Class Time Effectively.	80	26	12
6	My Instructor Works to Keep Students Attentive.	80	19	26
16	My Instructor is an Effective Teacher.	79	27	41
15	I Have Learned a Lot as a Result of this Course.	78	26	29
3	My Instructor Presents the Subject Matter Clearly	75	30	28
17	I Would Enjoy Taking Another Course from this Instructor.	73	22	49
2	My Instructor Seems Well Prepared for Class.	73	32	14
1	My Instructor Displays a Clear Understanding of Course Topics.	66	24	13
7	My Instructor Makes Students Aware of the Course Objectives.	55	52	19
14	My Instructor Explains the Grading System Clearly.	21	85	13
13	My Instructor Keeps Students Informed of Progress	19	80	22
12	My Instructor Grades Assignments and Exams Fairly.	36	67	32
11	My Instructor Gives Relevant Assignments and Exams	53	54	22
9	My Instructor Respects Students.	25	18	88
8	My Instructor is Approachable and is Willing to Assist Students.	26	25	85
10	My Instructor Provides Helpful Feedback.	46	37	67
	EIGENVALUE	**10.05**	**1.33**	**1.14**
	% VARIANCE	**59.1**	**7.8**	**6.7**

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student perceptions of the extent to which the instructor is helpful and respectful to students. This factor was labeled "interpersonal skills."

Factor Analysis of Research Ratings

Table 2 presents results of the principal components analysis performed on ratings obtained from the research methods classes. As was true with the non-research group, Factor I appears to be a competency construct loading on eight of the ten items that comprised "competency" among the non-research ratings and accounts for 49.5% of variance. Two items however which loaded on non-research Factor I, item 1 (clear understanding of topics) and item 7 (makes students aware of objectives) failed to load even moderately on the first factor extracted from the research data. Item 10 (helpful feedback) loaded highest on research Factor I even though it continued to load moderately on the third factor.

Factor II which accounted for 12.1% of variance, shared three common items with the second construct extracted for the non-research ratings: 11 (relevant assignments and exams), 12 (grades fairly), and 13 (keeps students informed of progress). Two competency items, 1 (clear understanding of topics) and 7 (makes

TABLE 2

FACTOR LOADINGS FOR PRINCIPAL COMPONENTS ANALYSIS OF RESEARCH METHODS RATINGS WITH VARIMAX ROTATION FOR FOUR FACTOR MODEL (DECIMAL POINTS OMITTED)

#	RATING ITEM	FACTOR I	II	III	IV
16	My Instructor is an Effective Teacher.	88	20	13	27
5	My Instructor Uses Class Time Effectively.	87	07	04	18
4	My Instructor Stimulates Interest in the Subject	86	16	17	09
17	I Would Enjoy Taking Another Course from this Instructor.	83	21	27	05
15	I Have Learned a Lot as a Result of this Course.	80	20	25	20
6	My Instructor Works to Keep Students Attentive.	78	34	08	-30
3	My Instructor Presents the Subject Matter Clearly	76	11	08	43
10	My Instructor Provides Helpful Feedback.	58	26	49	-01
2	My Instructor Seems Well Prepared for Class.	57	19	13	54
12	My Instructor Grades Assignments and Exams Fairly.	13	86	01	08
13	My Instructor Keeps Students Informed of Progress	14	80	23	01
7	My Instructor Makes Students Aware of the Course Objectives.	22	72	19	18
11	My Instructor Gives Relevant Assignments and Exams	49	66	14	24
1	My Instructor Displays a Clear Understanding of Course Topics.	12	59	13	51
8	My Instructor is Approachable and is Willing to Assist Students.	22	07	85	28
9	My Instructor Respects Students.	17	31	82	08
14	My Instructor Explains the Grading System Clearly.	14	18	20	71
	EIGENVALUE	8.42	2.06	1.27	1.04
	% VARIANCE	49.5	12.1	7.5	6.1

students aware of objectives) also loaded on Factor II which was named "instructional clarity."

Research Factor III included two of the three items that loaded on its non-research counterpart: 9 (respects students) and 8 (willing to assist students). This factor accounted for 7.5% of variance and was again labeled "interpersonal skills."

A fourth research factor produced an eigenvalue greater than 1.0 and accounted for 6.1% of variance. This factor however loaded saliently (.71) on only one pure (correlated with only one factor) rating variable, item 14 (instructor explains grading system). Moderate loadings (above .40) also occurred on three complex (correlated with more than one factor) rating items: 2 (instructor well prepared), 1 (clear understanding of topics), and 3 (presents subject matter clearly). Factor IV, a unique construct associated with ratings of the research methods course was named "thoroughness."

Discussion

After evaluating results of the factor analyses, the authors conclude that somewhat different criteria are used by students rating instructional effectiveness in the educational research methods course than are used by student raters in other graduate education courses. The presence of a fourth factor, "thoroughness", and the realignment of several items loading on Factors I and II provide the basis for this conclusion. Factor I accounts for considerably more variation among "other course" ratings than among research ratings (59.1% vs. 49.5%) while Factor II is stronger among the research ratings as indicated by the greater explained variance (12.1% vs 7.8%). This resulted from the previously mentioned realignment of loadings and led the authors to interpret the second factor very differently for the research ratings. The fourth research factor is not clearly defined by items included in the student rating instrument used in this study. It loads on only one pure rating item (14) and is saliently related to three items (1, 2, and 3) all of which load on other factors. Inspection of these four item loadings however provides rationale for a rating dimension which is interpretable and explains

essentially as much variance as the third factor (interpersonal skills).

The seemingly related constructs of "thoroughness" and "instructional clarity" appear to be standards used by students to judge the effectiveness of instruction in a master's level educational research methods course. Anxiety and discomfort experienced by students who suddenly find themselves in an unfamiliar quantitative environment can perhaps best be exorcised by an instructor who communicates course requirements and grading policies clearly and who is thorough and methodical in his or her approach to instruction.

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